

LYONDELL CHEMICAL COMPANY
Channelview Plant
Notice of Deficiency
May 25, 2005

1. In response to Modeling NOD No. 14, Lyondell reports the transmissibility for the Frio E-F is 315789 md-ft/cp. However, the permeability, thickness, and viscosity listed in Table 2-1 for the Frio E-F, layer 16, do not result in a 315789 md-ft/cp transmissibility.

Additionally, the Frio E-F sand operational transmissibility reported in Table 2-6 also disagrees with the reported transmissibility. Lyondell should confirm the data in the tables support the values reported in the text and used in the modeling.

Response: Lyondell has corrected the modeled transmissibility value for the Frio E&F Sand in the referenced Tables 2-1 and 2-6.

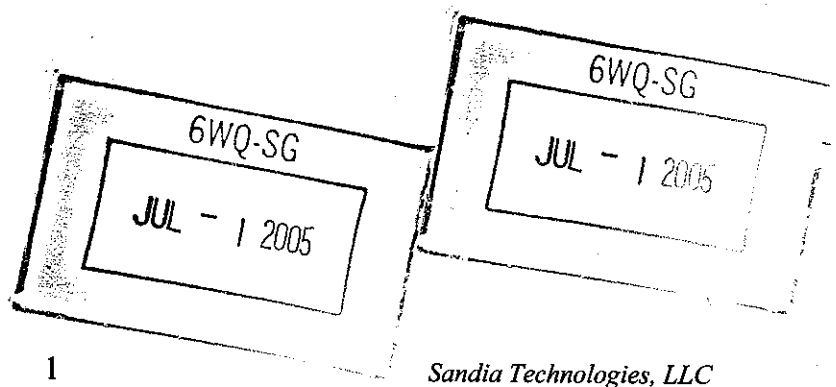
Lyondell has also added the results of the 2005 injection/falloff and interference testing conducted in Plant Well 1 (WDW-148) to Table 2-3 and is adding the interpretations of the tests to Appendix 2-6 of the reissuance.

2. Lyondell should revise the Frio C Sand correlation for the WDW-148 sidetrack log in Figure 5 in Appendix 1-9, located in Volume 1, to be consistent with the Frio C Sand annotated on the log included in Appendix 2-6, located in Volume 3.

Response: Lyondell has revised the C Sand correlation depicted in Figure 5 in Appendix 1-9 (Volume 1) to be consistent with the annotated log included in Appendix 2-6, Volume 3. Lyondell has also added the recompleted perforations in the Frio E&F Sand in both Plant Well 1 (WDW-148) and Plant Well 2 (WDW-162) to this figure.

3. A signed certification statement, as required in 40 CFR .§148.22(a)(4), should accompany the final submission of data for the reissuance. This statement should be dated after the date of any material submitted to certify that all information in the demonstration is covered by the statement.

Response: Lyondell has included a signed certification that is dated following preparation of the changes and additions included in this response so that all information in the demonstration is covered by the statement.



LYONDELL CHEMICAL COMPANY

Channelview Plant
Notice of Deficiency
March 2, 2005

General

3. In Section 1.5.1, page 1-29 of Volume 1, Lyondell references the radioactive tracer survey (RAT) contained in Appendix 1-5 for demonstrating mechanical integrity in WDW-148. Given 6315' was the depth of the lowest slug chase in the 700'+ distance between the packer and the top of the completed injection interval and the higher background radiation recorded during the pre-survey, the April 2004 RAT did not confirm the integrity of the well between the lowest slug chase and top of the injection interval. Lyondell should expand the mechanical integrity demonstration for WDW-148 to demonstrate the injected waste is being directly emplaced into the Frio E-F injection interval.

Response: Lyondell ran the 2005 radioactive tracer test on Plant Well 1 (WDW-148) on May 24, 2005. The injection rate used during the slug chase (and repeat) was reduced to an appropriate rate to frequently catch the slug in the tubing and in the liner between the packer and the perforations. A more careful analysis of the integrity of the liner between the packer and the perforations was conducted to demonstrate that the waste is directly emplaced into the Frio E&F Sand Injection Interval. The 2005 mechanical integrity test data is submitted with these revisions (Revision No. 5) to the reissuance.

Integrity of the liner casing between the packer and the perforations was analyzed by looking at both area of the radioactive slug and the velocity of the radioactive slug as it traveled down the wellbore. The two following tables show the analysis of the area of the radioactive slug during the first and second chases.

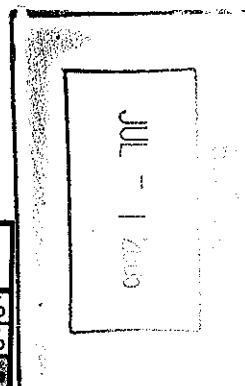
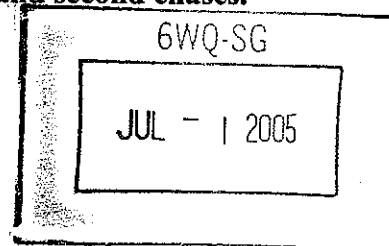
WDW-148 RAT Tracer Peaks
Casing Check
50 gpm

Run 1

5/24/05

Peak Number	Peak Depth	Location	Digitized Area	Area Percent
1	5,786	Inside Tubing	12,236.35	100.0%
2	5,884	Inside Tubing	12,353.77	101.0%
3	6,103	Liner	14,216.20	100.0%
4	6,380	Liner	17,295.24	121.7%
5	6,716	Top of Perfs	15,644.21	110.0%
6	6,762	Lower Perfs	2,741.54	19.3%
7	6,767	Lower Perfs	Dissipated	

** Normalized Value



WDW-148 RAT Tracer Peaks
Casing Check
50 gpm

Run 2 5/24/05

Peak Number	Peak Depth	Location	Digitized Area	Area Percent
1	5,794	Inside Tubing	9046.66	100.0%
2	5,917	Inside Tubing	9581.19	105.9%
3	6,200	Liner	14585.85	100.0%
4	6,538	Liner	16661.11	114.2%
5	6,758	Lower Perfs	3890.18	26.7%
6	6,766	Lower Perfs	Dissipated	

** Normalized Value

The two slug chases show no appreciable loss in the area of the radioactive slug in the liner of the well down to the perforations, demonstrating integrity of the liner casing and cement.

An analysis of the velocity of the slugs as they traveled through the liner is shown below.

Well , Slug 1 - 50 gpm	Depth (ft)	Delta Depth (ft)	Delta Time (sec)	Calculated Flow Rate (ft/sec)	Tubular ID (in)	Calculated Flow Rate (gpm)	Rate Percent (%)
Inside Tubing	5,786						
Inside Tubing	5,884	98	122	0.803	4.892	47.1	94.12%
Liner	6,103	219	372	0.589	6.276	56.8	113.53%
Liner	6,380	277	521	0.532	6.276	51.3	102.53%
Liner-Top Perfs	6,716	336	691	0.486	6.276	46.9	93.77%
Liner-Perfs	6,762	46	643	0.072	6.276	6.9	13.80%
Liner-Perfs	6,767	5	317	0.016	6.276	1.5	3.04%

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6W10-26

Well 1, Slug 2 - 50 gpm	Depth (ft)	Delta Depth (ft)	Delta Time (sec)	Calculated Flow Rate (ft/sec)	Tubular ID (in)	Calculated Flow Rate (gpm)	Rate Percent (%)
Inside Tubing	5,794						
Inside Tubing	5,917	123	138	0.891	4.892	52.2	104.43%
Liner	6,200	283	499	0.567	6.276	54.7	109.37%
Liner	6,538	338	625	0.541	6.276	52.1	104.29%
Liner-Top Perfs	6,758	220	762	0.289	6.276	27.8	55.68%
Liner-Perfs	6,766	8	483	0.017	6.276	1.6	3.19%

The velocity analysis shows that the reported injection rate of 50 gpm was

maintained in the tubing and the liner down to the perforations, demonstrating integrity of the liner.

The 2005 mechanical integrity test data (radioactive tracer and annulus pressure test) have been added to Section 1.5.1 and Appendix 1-5, located in Volume 1.

4. In Section 1.5.2, page 1-30 of Volume 1, Lyondell references the radioactive tracer survey (RAT) contained in Appendix 1-6 for demonstrating mechanical integrity in WDW-162. The lowest slug chase in the May 5, 2004, RAT was observed at a depth of 6490' within the 380' distance between the packer and the top of the completed injection interval at 6634'. Lyondell should provide further discussion or documentation to demonstrate the mechanical integrity of WDW-162 between the packer and top of the injection interval.

Response: Lyondell ran the 2005 mechanical integrity test on Plant Well 2 (WDW-162) on May 23, 2005. The injection rate used during the slug chase (and repeat) was reduced to an appropriate rate to frequently catch the slug in the tubing and in the casing between the packer and the perforations. A more careful analysis of the integrity of the casing between the packer and the perforations was conducted to demonstrate that the waste is directly emplaced into the Frio E&F Sand Injection Interval. The 2005 mechanical integrity test data is submitted with these revisions (Revision No. 5) to the reissuance.

Integrity of the casing between the packer and the perforations was analyzed by looking at both area of the radioactive slug and the velocity of the radioactive slug as it traveled down the wellbore. The two following tables show the analysis of the area of the radioactive slug during the first and second chases.

WDW-162 RAT Tracer Peaks
Casing Check
45 gpm

Run 1		5/23/05		
Peak Number	Peak Depth	Location	Digitized Area	Area Percent
1	6,229	Inside Tubing	23,834.59	100.0%
2	6,305	Inside Tubing	25,680.98	107.7%
3	6,382	Casing	19,742.26	100.0%
4	6,483	Casing	23,228.84	117.7%
5	6,583	Casing	21,592.06	109.4%
6	6,710	Upper Perfs	22,862.85	115.8%
7	6,756	Mid-Perfs	17,531.00	88.8%
8	6,775	Lower Perfs	8,790.26	44.5%

** Normalized Value

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6WQ-SG

WDW-162 RAT Tracer Peaks
Casing Check
45 gpm

Run 2 5/23/05

Peak Number	Peak Depth	Location	Digitized Area	Area Percent
1	6,243	Inside Tubing	7813.94	100.0%
2	6,343	Inside Tubing/Tubing End	6046.55	77.4%
3	6,526	Casing	7198.08	100.0%
4	6,670	Casing	7411.19	103.0%
5	6,760	Lower Perfs	3842.16	53.4%
6	6,790	Lower Perfs	1653.53	23.0%

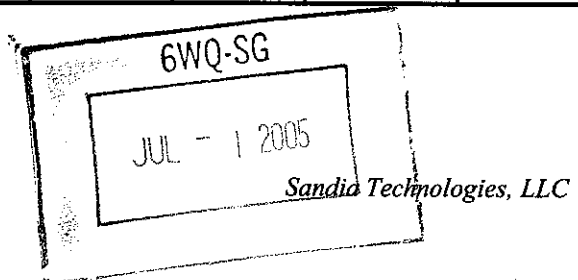
** Normalized Value

The two slug chases show no appreciable loss in the area of the radioactive slug in the casing of the well down to the perforations, demonstrating integrity of the casing and cement.

An analysis of the velocity of the slugs as they traveled through the casing is shown below.

Well 2, Slug 1 - 45 gpm	Depth (ft)	Delta Depth (ft)	Delta Time (sec)	Calculated Flow Rate (ft/sec)	Tubular ID (in)	Calculated Flow Rate (gpm)	Rate Percent (%)
Inside Tubing	6,229						
Inside Tubing	6,305	76	114	0.667	4.95	40.0	88.86%
Casing	6,392	87	279	0.312	8.921	60.8	135.00%
Casing	6,483	91	479	0.190	8.921	37.0	82.25%
Casing	6,583	100	517	0.193	8.921	37.7	83.74%
Casing	6,710	127	614	0.207	8.921	40.3	89.55%
Casing-perfs	6,756	46	354	0.130	8.921	25.3	56.26%
Casing-perfs	6,775	19	313	0.061	8.921	11.8	26.28%

Well 2, Slug 2 - 45 gpm	Depth (ft)	Delta Depth (ft)	Delta Time (sec)	Calculated Flow Rate (ft/sec)	Tubular ID (in)	Calculated Flow Rate (gpm)	Rate Percent (%)
Inside Tubing	6,243					gpm	
Inside Tubing	6,343	100	180	0.556	4.95	33.3	74.05%
Casing	6,526	183	845	0.217	8.921	42.2	93.76%
Casing	6,670	144	723	0.199	8.921	38.8	86.23%
Casing-Perfs	6,760	90	535	0.168	8.921	32.8	72.83%
Casing-Perfs	6,790	30	421	0.071	8.921	13.9	30.85%



The velocity analysis shows that the reported injection rate of 45 gpm was maintained in the tubing and the liner down to the perforations, demonstrating integrity of the casing.

The 2005 mechanical integrity test data (radioactive tracer and annulus pressure test) have been added to Section 1.5.2 and Appendix 1-6, located in Volume 1.

